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| EXAMINER |
|---|
| LIU, SHUWANG |

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Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/370,362 | FEHER, KAMILO | |
| | Examiner | Art Unit | |
| | Shuwang Liu | 2634 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *21 February 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-7 and 10-58* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 10-58* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

### *Specification*

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because of (1) using phrase "disclosed", (2) exceeding 250 words, and (3) lacking sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

Correction is required. See MPEP § 608.01(b).

### *Claim Objections*

3. Claims 4, 6, 10, 18, 21, 22, 28 and 56 are objected to because of the following informalities:

(1) In claim 1, 10, change "signal" to - -signals- -;

(2) In claims 4, 5, 6, and 43, last line, change "MM" to - -mis-matched- -;

(3) In claim 6, change "selection for Linear" in (c) to - -selecting for Linear- -. "BRA filter" in last line should be - -CS filter- -.

(4) In claim 18, line 2, change "the" to - -an- -;

(5) In claims 21 and 22, line 2, change "the external" to - -an external- -;

(6) In claim 28, change "the quadrature demodulator second BRA and MFS filter set" to – the second BRA and MFS filter set of the quadrature demodulator- -;

(7) In claim 46, line 2, insert - -cross-correlated- - after "modulated"; and

(8) In claim 56, change "the quadrature demodulator second BRA and MFS filter set" to – the second BRA and MFS filter set of the quadrature demodulator- - and "the quadrature modulation first BRA and MFS filter set" is changed to – the first BRA and MFS filter set of the quadrature modulator;

. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-7 and 10-58 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the demodulator " in line 13 and "that of the modulator filters" in the last line. There is insufficient antecedent basis for these limitations in the claim. Furthermore, it seems that a verb is missing before "to that" in last line.

Claim 2 recites the limitation "said processed in-phase and quadrature baseband signals" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim. Furthermore, it unclear what "their" in line 2 refers to.

Claim 3 recites the limitation "the cross correlating factor" in the last line. There is insufficient antecedent basis for this limitation in the claim.

Claim 4 recites the limitations "the BRA and MFS demodulator" in lines 16-17 and "that of the BRA and MFS filter set of the modulator" in line 20. There is insufficient antecedent basis for those limitations in the claim. It is also unclear whether "the I and Q signals" in (f) refer to "the cross-correlated I and Q signals" in (c) or "the in-phase signal " and "the quadrature-phase signal" in (b) before the cross-correlation. Furthermore, it unclear what signal is provided to the antenna in (g).

Claim 5 recites the limitations "the BRA and MFS demodulator" in (h), and "that of the BRA and MFS filter set of the modulator" in the last line . There is insufficient antecedent basis for those limitations in the claim. It does not understand why the processor means needs means for Quadrature modulating the I and Q signals in (f) after the means for quadrature modulating in (d). Furthermore; it unclear what signal is provided to the antenna in (g).

Claim 6 recites the limitations ""the BRA, MFS and CS demodulator" in (e) and "that of the BRA, MFS and BRA filter set of the modulator" in last line. There is insufficient antecedent basis for these limitations in the claim. It is unclear what is coupling with the transmission medium in (d).

Claim 7 recites the limitation ""the demodulator" in line 3. There is insufficient antecedent basis for the limitation in the claim.

In claim 11, it is unclear what difference is between "a cross-correlator" in (b) and "a circuit generating the cross-correlated signals" in (c) and if the "cross-correlator" does not generate the cross-correlated signals. Furthermore, claim recites the limitation ""the I and/or Q channels " in (d). There is insufficient antecedent basis for the limitation in the claim.

In claim 27, there is insufficient antecedent basis for "a second BRA and MFS filter set" unless other BRA and MFS filter set in the preceding text of claim 27;

Claim 28 recites the limitation ""the quadrature modulator first BRA and MFS filter set" in lines 4-5. There is insufficient antecedent basis for the limitation in the claim.

Claim 29 recites the limitation ""the quadrature modulator first BRA and MFS filter set" in lines 2-3. There is insufficient antecedent basis for the limitation in the claim.

Claim 30 recites the limitation "the quadrature modulator first BRA and MFS filter set" in line 2. There is insufficient antecedent basis for the limitation in the claim.

Claim 34 recites the limitation "one set of cross-correlation and filter parameters" in line 6. There is insufficient antecedent basis for the limitation in the claim. It is also unclear whether "the I and Q signals" in line 11 refer to the cross-correlated "in-phase and quadrature-phase shifted signals"" or "the in-phase signal and the quadrature-phase shifted signals" before the cross-correlation.

Claim 43 recites the limitation "the in-phase signal" in line 5, "the in-phase channel signal in (i), "the quadrature channel signal" in (iii), "the in-phase and

quadrature output signals" in (b), "Linear and /or None-Linearly Amplified (NLA) baseband" signals in (c), "the BRA, MFS and CS demodulator" in (f), and "that of BRA, MFS and BRA filter set of the modulator" in (h). There is insufficient antecedent basis for these limitations in the claim. It cannot understand what a quadrature-phase signal of the in-phase signal in line 5 is. Furthermore, does the cross-correlator provide "in-phase(I) and quadrature (Q) shifted signals" in line 5 or cross-correlated in-phase(I) and quadrature (Q) shifted signals? What are two signals for cross-correlation in (a)?

Claim 44 recites the limitation "the I and /or Q channels" in line 11. There is insufficient antecedent basis for the limitation in the claim.

In claim 45, How can be modulating the I and Q signals to generate quadrature **cross-correlated** signals?

Claim 50 recites the limitation "amplifier" in line 1. There is insufficient antecedent basis for the limitation in the claim.

In claim 52, it cannot be understand the meaning of "demodulating the received or communication with the receiver port" in lines 1-2.

Claim 53 recites the limitation "the quadrature demodulating" in line 1. There is insufficient antecedent basis for the limitation in the claim. How can the **demodulating** comprises a demodulator?

Claim 54 recites the limitation "the quadrature modulation" in line 1. There is insufficient antecedent basis for the limitation in the claim.

In claim 55, there is insufficient antecedent basis for "a second BRA and MFS filter set" unless other BRA and MFS filter set in the preceding text of claim 55;

In claim 57, there is insufficient antecedent basis for "a second quadrature-phase signal" in (ii) unless other quadrature-phase signal in the preceding text of claim 57. It cannot understand what a quadrature-phase shifted signal of the in-phase signal in last line is.

In claim 58, there is insufficient antecedent basis for "a second quadrature-phase channel signal" in line 4 unless other quadrature-phase channel signal in the preceding text of claim 57. It cannot understand what a quadrature-phase shifted signal of the in-phase signal in last two lines is.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 7, 34, 35, and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Feher (US 5,491,457, see IDS, #4).

As shown in figures 3A, 3B, 8, 19 and 20, Feher discloses:

(1) regarding claim 7:

A structure comprising:

an interface receiver port (94) to provide connection of received Bit Rate Agile cross-correlated filtered quadrature modulated signal to a demodulator; and

a demodulator structure (98 and 99) to serve for signal demodulation of said signal.

(2) regarding claim 34:

A signal processor comprising:

an input circuit (102) providing in-phase (I) and quadrature-phase (Q) shifted signals;

a cross-correlator (103)for cross-correlating the in-phase and quadrature-phase shifted signals (see claim 1);

a signal generator for generating in-phase and quadrature-phase shifted output signals having amplitudes such that the vector sum of the output signals is substantially the same (see figure 4 and claim 8) at virtually all phase angles of each bit period for one set of cross-correlation and filter parameters and the vector sum is not substantially the same for another set of chosen filter parameters (see figure 5 when a is not equal to 0.7) ;

a control circuit (adjustable filters 84) for selecting particular cross-correlated signal elements filters and waveforms in the I and/or Q channels from a set of predetermined cross-correlated signal elements filters and selectable waveforms in the I and/or Q channels (column 7, lines 56-67); and

a quadrature modulator (85) for quadrature modulating the I and Q signals to generate a cross-correlated modulated output signal (column 8, lines 14-33 and claim 2).

(3) regarding claim 35:

further comprising: an amplifier (87) performing linear and/or non-linear amplification of the quadrature modulated I and Q signals, the amplified signals inherently coupled to an external transmit antenna (not shown) for transmission of a transmit signal, the transmit signal being an amplified quadrature modulated cross-correlated signal (column 15, lines 40-45).

(4) regarding claim 42:

wherein the input circuit includes signal processing circuitry (304, 306 and 308, see figure 3C) for processing one or more input signals to generate in-phase (1) and quadrature-phase (Q shifted signals from the one or more input signals.

8. Claims 4, 11-33, 44-55 are rejected under 35 U.S.C. 102(e) as being anticipated by Feher (US 6,198,777).

As shown in figures 6 and 7, Feher discloses:

(1) regarding claims 11 and 44:

A signal processor and a method, comprising:

(a) an input (6.5) adapted to receive in-phase (I) and quadrature-phase (Q signals (column 12, lines 48-63);

(b) a cross- correlator (6.5) for cross-correlating a fraction of a symbol or one or more than one symbol of the in-phase (1) signal with a fraction of a symbol or one or more than one symbol of the quadrature-phase (Q) signal (column 13, lines 33-37);

(c) a circuit (6.5) generating the cross-correlated signals; and

(d) a control circuit (output signals C, 6.6, 6.11, 6.8, 6.7, 6.12 and 6.13) selecting particular cross-correlated signal elements filters and selectable waveforms in the I and/or Q channels from a set of predetermined cross-correlated signal elements filters and selectable waveforms in the I and/or Q channels (column 12, line 62-column 13, line 43).

(2) regarding claims 12 and 45:

further comprising:

(e) a quadrature modulator (6.9 and 6.15)for quadrature modulating the I and Q signals.

(3) regarding claims 13 and 46:

further comprising:

(f) an amplifier (6.17 in figure 6 and AMP in figure 7) for amplifying the quadrature modulated signals.

(4) regarding claims 14 and 47:

wherein the amplifier comprises a linear amplifier operating in a substantially linear amplification range and providing substantially linear amplification (column 13, lines 54-57).

(5) regarding claims 15 and 48:

wherein the amplifier comprises a non-linear amplifier operating in at least a partially non-linear amplification range and providing at least a partial of non-linear amplification (column 13, lines 54-57).

(6) regarding claims 16 and 49:

wherein the amplifier comprises a linear amplifier stage and a non-linear amplifier stage (column 13, lines 54-57).

(7) regarding claims 17 and 50:

wherein the amplifier is coupled or couplable to an external transmit antenna (114 in figure 7) and provides amplified signals to the antenna, the external transmit antenna for transmitting the cross-correlated amplified signals.

(8) regarding claim 18:

wherein the cross-correlated processor further comprises (h) the external transmit antenna (114) for transmitting the cross-correlated amplified signals.

(9) regarding claims 19 and 51:

wherein the transmitted cross-correlated amplified signals are adapted to be received by an external receive antenna (114).

(10) regarding claim 20:

wherein the transmitted cross-correlated amplified signals are adapted to be received by an external receive antenna (114).

(11) regarding claim 21:

further comprising:

(i) the external receive antenna (114) for receiving the transmitted cross-correlated amplified signals.

(12) regarding claim 22:

further comprising:

(i) the external receive antenna (114) for receiving the transmitted cross-correlated amplified signals.

(13) regarding claims 23 and 52:

further comprising:

(j) a receiver port (6.21) for receiving a received modulated cross-correlated amplified signal from the receive antenna; and

(k) a quadrature demodulator (6.23 and 6.25 or 119 in figure 7) coupled for communication with the receiver port and receiving the received modulated cross-correlated amplified signal.

(14) regarding claims 24 and 53:

wherein the quadrature demodulator comprises a BRA and MFS signal capable quadrature demodulator (see 103 in figure 7 and abstract).

(15) regarding claim 25:

further comprising:

a mis-matched (MM) BRA and MFS demodulator filter set (column 14, line 22-column 15, line 42).

(16) regarding claims 26 and 54:

wherein the quadrature modulator includes a first BRA and MFS filter set (column 14, line 22-column 15, line 42).

(17) regarding claims 27 and 55:

wherein the quadrature demodulator includes a second BRA and MFS filter set (column 14, line 22-column 15, line 42).

(18) regarding claims 28 and 56:

wherein:

the quadrature modulator includes a first BRA and MFS filter set;

the quadrature demodulator includes a second BRA and MFS filter set; and

the quadrature demodulator second BRA and MFS filter set is mis-matched to the quadrature modulator first BRA and MFS filter set (column 14, line 22-column 15, line 42).

(19) regarding claim 29:

wherein the demodulator includes a filter set that is mis-matched to that of the BRA and MFS filter set of the modulator (column 14, line 22-column 15, line 42).

(20) regarding claim 30:

wherein the demodulator filter set is mis-matched to that of the BRA and MFS filter set of the modulator (column 14, line 22-column 15, line 42).

(21) regarding claim 31:

wherein the circuit generating the cross-correlated signals comprises a circuit selected from the set of circuit types consisting of an one or a plurality of analog active

circuits, one or a plurality of analog passive circuits, one or a plurality of digital circuits, and combinations thereof (see the description for block 6.5 in figure 6).

(22) regarding claim 32:

wherein the circuit generating the cross-correlated signals comprises a circuit selected from the set of circuit types consisting of an one or a plurality of analog active circuits, one or a plurality of analog passive circuits, one or a plurality of digital circuits, and combinations thereof (see the description for block 6.5 in figure 6).

(23) regarding claim 33:

wherein a single antenna serves as the receive antenna and the transmit antenna (114 in figure 7).

(24) regarding claim 4:

the signal processor comprising:

(a) means (6.5) for providing in-phase and quadrature-phase signals (column 12, lines 48-63);;

(b) means (6.5) for cross-correlating a fraction of a symbol or one or more than one symbol of the in-phase (I) signal with a fraction of a symbol or one or more than one symbol of the quadrature-phase (Q) signal (column 13, lines 33-37);

(c) means 6.6, 6.7, 6.8,6.11, 6.12 and 6.13) for generating filtered cross-correlated I and Q signals (column 13, lines 33-37);

(d) means for implementing the cross-correlated signals by analog active or passive circuits, by digital circuits or combination thereof (see the description for block 6.5 in figure 6;

(e) means for providing a control circuit to select from a set of predetermined cross-correlated waveforms provided to filters in the I and/or Q channels (column 13, lines 33-37);

(f) means (6.9 and 6.15) for Quadrature modulating the I and Q signals;

(g) means (6.17 in figure 6 or 111 in figure 7) for Linear and/or Nonlinear amplification to provide to the antenna;

(h) a receiver port (115) for connection of the received cross-correlated signal to the BRA and MFS demodulator;

(i) a BRA and MFS quadrature demodulator (119); and

(j) a Mis-Matched (MM) BRA and MFS demodulator filter set in which the said demodulator filter set is MM to that of the BRA and MFS filter set of the modulator (column 14, line 22-column 15, line 42).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1-3, 7, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feher (US 6,445,749) in view of Higgins et al. (US 5,341,396).

As shown in figures 19 and 20, Feher discloses a communication system and a method, comprising:

(1) regarding claims 1 and 7:

an input port for receiving input data (101 in figure 3A);

a splitter (102) receiving an input signal and splitting said input signal into baseband signal streams;

a baseband signal processing network (1901, 1903, 1904 1905 and 1902 or 2010, 2001, 2011, ....) receiving said baseband signal streams and providing cross-correlated filtered in-phase and quadrature-phase baseband signals;

a quadrature modulator (104 in figure 3A) receiving and quadrature modulating said cross-correlated filtered in-phase and quadrature-phase baseband signals to generate a quadrature modulated output signal;

an interface transmitter port (output of NLA in figure 3A) to provide said quadrature modulated signal to the transmission medium;

an interface receiver port (input of 94 in figure 8) to provide connection of the said cross-correlated filtered quadrature modulated signal to a demodulator (98); and

a demodulator structure (figures 8 and 15) having demodulation filter (99) mis-matched (MM) to filtered modulated signal (column 10, lines 54-63, column 4, lines 28-66 and column 6, lines 15-40).

Feher discloses all of the subject matter as described above except for specifically teaching a bit rate agile communication system as recited in claim 1.

Higgins et al., in the same field of endeavor, teaches a communication system (figure 3) which is a bit rate agile communication system (column 4, lines 28-66 and column 6, lines 15-40).

It would be desirable to have a variable data rate and bandwidth efficient in the communication system. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the function of variable data rate as taught by Higgins et al. in the system of Feher in order to allow the system to transmit and receive variable rate. In so doing, the bandwidth efficiency, the security and the power assumption of the system can be improved.

(2) regarding claim 2:

wherein said processed in phase and quadrature phase baseband signals have amplitudes such that their vector sum is substantially constant and has reduced resultant quadrature modulated envelope fluctuations (column 12, lines 11-38).

(3) regarding claims 3 and 10:

further comprises means for selectively reducing the cross correlating factor down to zero (column 12, lines 20-24).

11. Claims 5 and 36-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feher (US 5,491,457) in view of Feher (US 6,198,777).

(1) regarding claims 5 and 36-39:

Feher (US 5,491,457) discloses all of the subject matter as described in claim 35 except for specifically teaching a receiver port coupled to an external receive antenna

for receiving the transmitted amplified quadrature modulated cross-correlated signal for connection to an external BRA and MFS quadrature demodulator and the quadrature modulator includes a BRA and MFS filter set as recited in claim 39.

Feher (US 6,198,777), in the same field of endeavor, teaches a receiver port coupled to an external receive antenna (114 in figure 7) for receiving the transmitted amplified quadrature modulated cross-correlated signal for connection to an external BRA and MFS quadrature demodulator (119 in figure 7). Furthermore, Feher (US 6,198,777) teaches that the quadrature modulator includes a BRA and MFS filter set (column 14, line 22-column 15, line 42) as recited in claim 39.

It would be desirable to have a variable data rate and bandwidth efficient in the communication system. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the BRA and MFS quadrature modulator and demodulator the as taught by Feher (US 6,198,777) in the system of Feher (US 5,491,457) in order to allow the system to transmit and receive variable rate. In so doing, the bandwidth efficiency, the security and the power assumption of the system can be improved.

Feher (US 6,198,777) further teaches:

(2) regarding claims 40 and 5:

further comprising: a Mis-Matched (MM) BRA and MFS demodulator filter set (column 14, line 22-column 15, line 42).

(3) regarding claims 41 and 5:

wherein the demodulator filter set is mis-matched to that of the BRA and MFS filter set of the modulator (column 14, line 22-column 15, line 42).

***Double Patenting***

12. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

13. Claims 1 and 7 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 2 of patent No. 66470055. Although the conflicting claims are not identical, they are not patentably distinct from each other because the broader application claims would have been obvious in view of the narrow issued claims (see In re Emert, 124 F.3d 1458, 44 USPQ2d 1149).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Allowable Subject Matter

1. Claims 6, 43, 57 and 58 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph and objections, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to teach and suggest the in-phase and quadrature-phase channel signals characterized in that:

(i) when the in-phase channel signal is zero, the quadrature-phase shifted signal is close to the maximum amplitude normalized to one (1);

(ii) when the in-phase channel signal is non-zero, the maximum magnitude of the quadrature-phase shifted signal is reduced from 1 (normalized) to A, where $0 \preceq A \preceq 1$;

(iii) when the quadrature-phase channel signal is zero, the in-phase signal close to the maximum amplitude; and

(iv) when the quadrature-phase channel signal is non-zero, the in-phase signal is reduced from 1 (normalized) to A, where $0 \preceq A \preceq 1$; and the first in-phase and second quadrature-phase signal set components derived from at least one signal stream as a fraction a symbol or from one or more than one symbol as a time constrained signal (JCS) response and cascaded long response (LR) filtered signal symbols of one or more input signals with signal symbols of a quadrature-phase shifted signal of the in--phase signal. The closed prior art (us4567602) only teaches $1/2^{1/2} \preceq A \preceq 1$.

***Conclusion***

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shuwang Liu whose telephone number is (703) 308-9556.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin, can be reached at (703) 305-4714.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

**(703) 872-9314 (for Technology Center 2600 only)**

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Shuwang Liu
Primary Examiner
Art Unit 2634

May 7, 2003